

SUMMARY

The aircraft departed from Stockholm/Arlanda Airport for a scheduled flight to Torsby in Värmland. The takeoff was delayed due to prevailing weather with heavy snowfall. On board were 15 passengers and two crew members. The weather forecasts for the current flight sector contained warnings of severe icing. The aircraft's propeller deicing system for the right engine was out of order, which was known by the commander. The malfunction was not noted in the aircraft logbook.

At the airport in Torsby snow clearing was in progress due to the weather with 2 000 meters visibility in snowfall. In the final phase of the clearing the friction coefficients were measured (see Section 1.6.9) on the runway and reported to the arriving aircraft. The measured coefficients - which corresponded to medium braking action - did not cause any action by the pilots as corrections for this was not included in the operator's performance data.

The aircraft initiated a manual approach to runway 16 with the co-pilot at the controls. The landing took place well into the runway with about 800 meters remaining runway length. After touchdown the commander took over control of the airplane and started braking. The aircraft was unable to stop before the runway end and the commander then decided to try to steer off to the right onto the taxiway. This was not successful, and the aircraft ran out into the snow in the angle between the runway and the taxiway. No one was injured during the incident.

SHK has analyzed the Aircraft's Flight Recorder (FDR) and Voice Recorder (CVR). In the analysis of the FDR it was found that the recorded values could not be used as the operator lacked proper documentation for readout. SHK's own corrections of the recordings showed that the approach was not stabilized and indicated altitude and speed variations, and showed that touchdown occurred with a higher speed than normal. Data from the CVR could not be used because the device had not been disconnected in time after the incident.

The investigation has revealed a number of deviations associated with the flight:

- The landing was carried out without having made use of friction coefficients and without having access to any relevant performance data for landing on contaminated runways.
- The approach was not stabilized and the operator had no coherent concept for stabilized approach.
- A deficient technical standard regarding the operator's maintenance of the FDR aimed at securing the possibility of a correct readout of the recorded data.
- Inadequate management of CVR regarding the shutdown of the unit after an incident.

During the investigation, SHK has also noted other shortcomings of the operator that have not had any direct connection with the incident:

- The operator's system for handling technical remarks did not follow current regulations.

- The decision to start from Arlanda with the right side's propeller de-icing system unserviceable, under conditions entailing a risk of severe icing conditions, implied non-compliance with the Minimum Equipment List.

The direct cause of the aircraft running off the runway is simple to establish:

The touchdown took place too far into the runway and at too high a speed.

However, this conclusion is inadequate as a thorough explanation of the incident and, even more so, as a basis for any effective safety recommendations.

SHK has therefore on the next page attempted to make a brief visualisation of the reasoning that may summarise the cause analysis of the incident in Torsby.

The crew was unable to get the aircraft to stop after landing and it veered off the runway.



The touchdown took place too far into the runway and at too high speed.



The approach was not stabilised.



The operator did not apply any coherent concept for stabilised approach.



The operator's weighing of production against safety has not been in balance.



The operator's systematic safety work has not lived up to the requirements that must be imposed on a commercial operator.



The responsible regulator has failed to detect and take measures against the deficiencies in the operator's systematic safety work.

Safety recommendations

Considering that the Swedish Transport Administration has terminated the contract with the operator in question, SHK has limited the report's recommendations to only one directed to the Estonian civil aviation regulator, *Lennuamet*, which is recommended to:

- Tighten its supervision of the operator, AS Avies, in order to ensure that operations are conducted in accordance with applicable flight safety requirements, in particular with respect to such deficiencies as identified in section 2.5 of this report. (RL 2015:10 R1)